General

Guideline Title

Best evidence statement (BESt). Blood sparing procedure in hematopoietic stem cell transplant patients via a central access device.

Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Best evidence statement (BESt). Blood sparing procedure in hematopoietic stem cell transplant patients via a central access device. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2012 Mar 12. 7 p. [10 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

The strength of the recommendation (strongly recommended, recommended, or no recommendation) and the quality of the evidence (1aâ€'5b) are defined at the end of the "Major Recommendations" field.

There is insufficient evidence and a lack of consensus to make a recommendation on the use of blood sparing procedure in pediatric hematopoietic stem cell transplant patients via a central venous access device.

> Note: Blood sparing procedure is an effective blood conservation method via arterial lines (Harber, Sosnowski, & Hegde, 2006 [2b]; MacIsaac et al., 2003 [2b]; Mukhopadhyay et al., 2010 [4a]; Tinmouth, McIntyre, & Fowler, 2008 [4a]; Thaverdiranathan, et al., 2005 [4b], Vincent et al., 2002 [4b]; Silver et al., 1993 [4b]; Fowler & Berenson, 2003 [5a]).

> Note: Use of a closed system device with lab draws does not increase risk for blood stream infection via arterial lines (Peruzzi et al., 1996 [3b]; Fowler & Berenson, 2003 [5a]).

Definitions:

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain

Quality Level	Definition
4a or 4b 5a or 5b	Weak study design for domain General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

Table of Recommendation Strength

Strength	Definition
It is strongly recommended that… It is strongly recommended that… not…	There is consensus that benefits clearly outweigh risks and burdens (or vice versa for negative recommendations).
It is recommended that… It is recommended that… not…	There is consensus that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation…	

See the original guideline document for the dimensions used for judging the strength of the recommendation.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Conditions requiring hematopoietic stem cell transplant

Guideline Category

Evaluation

Management

Clinical Specialty

Family Practice

Oncology

Pediatrics

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

To evaluate, in hematopoietic stem cell transplant patients, if a blood sparing procedure using a closed system device via central venous device versus standard lab draw procedure via a central venous device impacts the need for transfusion and infection risk

Target Population

Hematopoietic stem cell transplant (HSCT) patients

Interventions and Practices Considered

1. Blood sparing procedure using a closed system device via central venous device
2. Standard lab draw procedure via a central venous device

Major Outcomes Considered

- Transfusion rates
- Infection risk

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Search Strategy

A search of the literature was conducted by the unit level shared governance inquiry council from August 2010 to June 2011. The databases searched include: Ovid Medline, CINAHL, and Cochrane Library. A hand search was also conducted and questions were sent to the National Association of Children's Hospitals and Related Institutions (NACHRI) and Association of Pediatric Hematology Oncology Nurses (APHON) electronic mailing service. Search terms include: blood conservation, blood sparing, phlebotomy, transfusion, anemia, hematology oncology, pediatric, bone marrow transplant, critical care, blood management, blood wastage, and blood salvage. A filter of English language was applied.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Not stated

Rating Scheme for the Strength of the Recommendations

Table of Recommendation Strength

Strength	Definition
It is strongly recommended that… It is strongly recommended that… not…	There is consensus that benefits clearly outweigh risks and burdens (or vice versa for negative recommendations).
It is recommended that… It is recommended that… not…	There is consensus that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation…	

See the original guideline document for the dimensions used for judging the strength of the recommendation.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Peer Review

Description of Method of Guideline Validation

This Best Evidence Statement has been reviewed against quality criteria by 2 independent reviewers from the Cincinnati Children's Hospital Medical Center (CCHMC) Evidence Collaboration.

Evidence Supporting the Recommendations

References Supporting the Recommendations

Fowler RA, Berenson M. Blood conservation in the intensive care unit. Crit Care Med. 2003 Dec;31(12 Suppl):S715-20. [70 references] PubMed

Harber CR, Sosnowski KJ, Hegde RM. Highly conservative phlebotomy in adult intensive care--a prospective randomized controlled trial. Anaesth Intensive Care. 2006 Aug;34(4):434-7. PubMed

MacIsaac CM, Presneill JJ, Boyce CA, Byron KL, Cade JF. The influence of a blood conserving device on anaemia in intensive care patients. Anaesth Intensive Care. 2003 Dec;31(6):653-7. PubMed

Mukhopadhyay A, Yip HS, Prabhuswamy D, Chan YH, Phua J, Lim TK, Leong P. The use of a blood conservation device to reduce red blood cell transfusion requirements: a before and after study. Crit Care. 2010;14(1):R7. PubMed

Peruzzi WT, Noskin GA, Moen SG, Yungbluth M, Lichtenthal P, Shapiro BA. Microbial contamination of blood conservation devices during routine use in the critical care setting: results of a prospective, randomized trial. Crit Care Med. 1996 Jul;24(7):1157-62. PubMed

Silver MJ, Li YH, Gragg LA, Jubran F, Stoller JK. Reduction of blood loss from diagnostic sampling in critically ill patients using a blood-conserving arterial line system. Chest. 1993 Dec;104(6):1711-5. PubMed

Thavendiranathan P, Bagai A, Ebidia A, Detsky AS, Choudhry NK. Do blood tests cause anemia in hospitalized patients? The effect of diagnostic phlebotomy on hemoglobin and hematocrit levels. J Gen Intern Med. 2005 Jun;20(6):520-4. PubMed

Tinmouth AT, McIntyre LA, Fowler RA. Blood conservation strategies to reduce the need for red blood cell transfusion in critically ill patients. CMAJ. 2008 Jan 1;178(1):49-57. PubMed

Vincent JL, Baron JF, Reinhart K, Gattinoni L, Thijs L, Webb A, Meier-Hellmann A, Nollet G, Peres-Bota D, ABC (Anemia and Blood Transfusion in Critical Care) Investigators. Anemia and blood transfusion in critically ill patients. JAMA. 2002 Sep 25;288(12):1499-507. PubMed

Type of Evidence Supporting the Recommendations

Current evidence was found to be insufficient to make a recommendation.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Decreased need for transfusion and decreased infection risk

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Audit Criteria/Indicators

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2012 Mar 12

Guideline Developer(s)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

Source(s) of Funding

Cincinnati Children's Hospital Medical Center

Guideline Committee

Not stated

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

No financial conflicts of interest were found.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the Cincinnati Children's Hospital Medical Center Web site .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati

Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

Availability of Companion Documents

The following are available:

- Judging the strength of a recommendation. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Jan. 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .
- Grading a body of evidence to answer a clinical question. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .
- Table of evidence levels. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Feb 29. 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

In addition, suggested process or outcome measures are available in the original guideline document .

Patient Resources

None available

NGC Status

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